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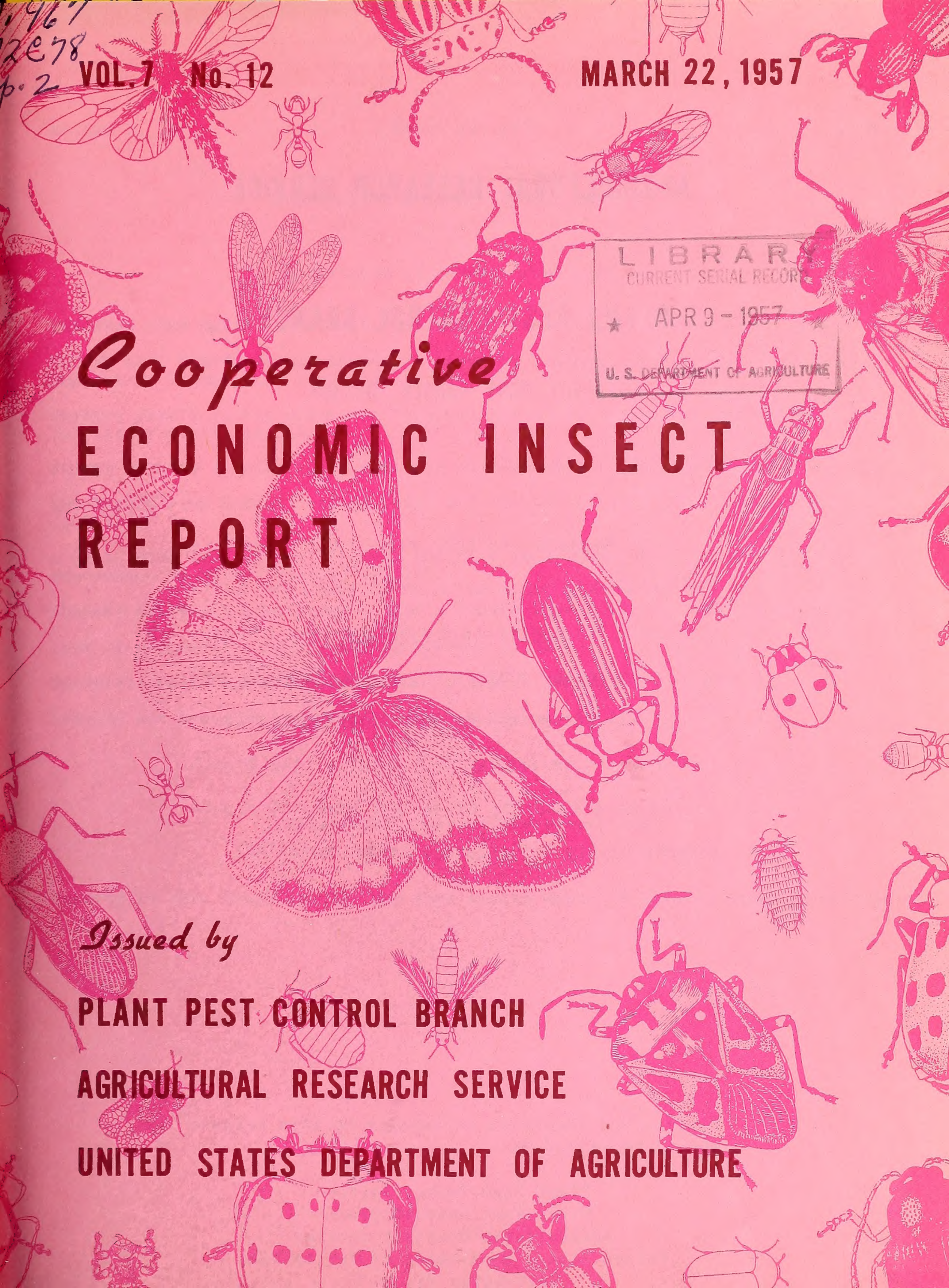

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL BRANCH

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL BRANCH

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Branch
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Volume 7 March 22, 1957 Number 12

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

EUROPEAN CORN BORER survival 87 percent at Brookings, South Dakota. (p.211).

CLOVER LEAF WEEVIL damage unusually heavy in Piedmont area of North Carolina. Population higher than last year in Illinois. (p.211).

ALFALFA WEEVIL larvae active in Virginia and North Carolina. New county records for latter State. (p.211).

POTATO PSYLLID infestations beginning on potatoes in areas of Arizona. (p.213).

RED-HEADED PINE SAWFLY causing heavy defoliation of pine in Okaloosa County. (p.213).

A GRAIN MOTH (Haplotinea ditella) reported from Idaho; apparently first recorded occurrence in United States. (p.214).

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Distribution of RANGE GRASSHOPPERS. (p.225). CORRECTION. (p.214).

INSECTS not known to occur in the United States. (p.227).

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Reports in this issue are for the week ending March 15 unless otherwise designated.

WEATHER BUREAU'S 30-DAY OUTLOOK

Mid-March to Mid-April 1957

The Weather Bureau's 30-day outlook for the period mid-March to mid-April calls for temperatures to average above seasonal normals from the Appalachian Mountains eastward. Below normal averages are predicted west of the Mississippi River, with greatest departures in the southern Rocky Mountain States. In unspecified areas, near normal temperatures are indicated. Precipitation is expected to exceed normal over most of the nation except for the Great Plains, the far Southwest, and the area east of the Appalachians, where amounts not far from normal are indicated.

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D.C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING MARCH 18

Twice this week Pacific coastal disturbances moving into the Central Plains States from the northwest and southwest combined and developed into exceptionally active storm centers as warm, moist Gulf air was drawn into the circulation patterns. Moving northeastward, the first storm passed over the northwestern Lakes region, while the second is taking a path a little farther south. Both were accompanied by heavy snowfalls generally extending from eastern Nebraska and the Dakotas through Iowa and Minnesota, and in the case of the latter into Wisconsin and northern Michigan. South of the storm centers thunderstorms were numerous and tornadoes were observed near Champaign, Illinois and Houston, Texas on Thursday and Sunday, respectively. Winds of 40 to 60 m.p.h. whipped the snows in the Dakotas and Minnesota into blizzard-like conditions, hampering both ground and air transportation and causing the loss of several lives. Strong winds also caused some soil erosion to unprotected fields in many of the Plains States with some damage to wheat reported in local areas of Nebraska and Kansas. At Greater Rockford Airport in Illinois gale force winds destroyed a 280-foot concrete wall of a $530,000 hangar, and at Sterling, Illinois, a roof was torn off of a large garage. Temperatures for the week averaged above normal over the eastern half of the Nation, in the central and southern Plains, and westward through Wyoming, Utah, and Arizona, while in the Far West and along the Canadian Border eastward to Minnesota weekly departures were near seasonal to 4°or 5° below normal. Greatest departures were observed in the southern Lakes region where the influx of warm air resulted in temperatures of 9° to 15° above normal. Many record temperatures for the date and for so early in the season were reported from Illinois to New York on Wednesday and Thursday as maxima reached the middle 70's at numerous locations throughout the area. Precipitation totals this week were greatest in the snowfall area mentioned above, in the Pacific Coastal States, along the western two-thirds of the Gulf coast, in eastern Texas, the lower Mississippi Valley, the eastern Minnissippi Valley, the southern Appalachian region, and coastal sections of the Atlantic States. Elsewhere amounts were light except in the southern Rocky Mountain and Plateau States where no significant precipitation occurred. Thunderstorm activity in eastern Texas on Sunday was responsible for locally heavy downpours totaling 5 inches or more in the Houston area. Snow depths were substantially increased at lower elevations in eastern sections of Nebraska and the Dakotas, western Iowa, and central and northern Minnesota. On Monday morning 15 inches was reported on the ground at Sioux City, Iowa, where 10 inches had accumulated during the night. Snowfalls accompanying the earlier storm deposited 19.5 inches at Wadena, Minnesota, in 24 hours to establish a new record at that station. Depths also increased at higher elevations in the Far West where Mount Baker Lodge, Washington now reports 180 inches, Twin Lakes, California, 72 inches, and Crater Lake, Oregon, 135 inches. Ice thickness reports for the week include 23 inches at Bismarck; North Dakota, 7 inches at Huron, South Dakota; 21 inches at Duluth, Minnesota; 22 inches at Escanaba, Michigan. (Summary Supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

EUROPEAN CORN BORER (*Pyrausta nubilalis*) - SOUTH DAKOTA - Winter survival of larvae averaged approximately 87 percent in Brookings County. (Hantsbarger).

CORN LEAF APHID (*Rhopalosiphum maidis*) - ARIZONA - Light to medium infestation in various 40 to 80 acre fields southwest of Mesa. Plants coming into tasseling stage. (Ariz. Coop. Rept.).

ARMYWORM (*Pseudaletia unipuncta*) - LOUISIANA - Small numbers of larvae continue to occur in small grains in East Baton Rouge Parish. (Oliver).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - OKLAHOMA - Increasing in small grains in areas of Kiowa and Washita Counties. (Hudson). KANSAS - Larval counts low in few alfalfa fields in Chautaugua, Cowley and Butler Counties; averaging not over 2 per square foot. (Matthew).

GREENBUG (*Toxoptera graminum*) - OKLAHOMA - Very light, scattered infestations in small grains in Lincoln and Muskogee Counties. Winged and gravid females found all infested fields. (Coppock). LOUISIANA - Populations light in small grains in Tensas and East Baton Rouge Parishes. (Oliver). KANSAS - None found in twelve southeast counties. (Matthew).

ENGLISH GRAIN APHID (*Macrosiphum granarium*) - KANSAS - Very low numbers in wheat and barley fields in Cherokee, Labette and Montgomery Counties. (Matthew).

WINTER GRAIN MITE (*Penthaleus major*) - OKLAHOMA - Scattered populations most fields of small grains in eastern and northeastern counties. Populations in Rogers County up to 125 per linear foot of row; lighter other counties. (Coppock). KANSAS - No economic populations found in 12 southeast counties. (Matthew).

BROWN WHEAT MITE (*Petrobia latens*) - KANSAS - No economic populations found in 12 southeast counties. (Matthew).

SPOTTED ALFALFA APHID - OKLAHOMA - Populations extremely low in northeastern counties. (Coppock). ARIZONA - Reached economic numbers in few fields in Tucson area. (Ariz. Coop. Rept.). LOUISIANA - Very light populations in two alfalfa fields in Tensas Parish. (Oliver). KANSAS - None found in alfalfa fields in 12 southeast counties. Aphids found on alfalfa growing in road-cut in Pottawatomie County, northeast area. (Matthew). SOUTH DAKOTA - None found in 4 southeastern counties. (Hantsbarger).

PEA APHID (*Macrosiphum pisi*) - VIRGINIA - Infestations present in alfalfa over State. No control measures anticipated. (Morris). ILLINOIS - More abundant in southwestern area than in 1956. Average per square foot was 2.5 compared with 0.1 in 1956.

CLOVER LEAF WEEVIL (*Hypera punctata*) - NORTH CAROLINA - Heaviest damage seen in years on alfalfa in many Piedmont counties. (Dogger, Jones). VIRGINIA - Light in alfalfa fields in Roanoke County (Evans, Allen) and red clover fields in Henry County (Pollard). ILLINOIS - Average larval population in southwestern area was 13.5 per square foot compared with 1956 average of 8 per square foot. (Ill. Ins. Rept.).

ALFALFA WEEVIL (*Hypera postica*) - NORTH CAROLINA - First known infestations found in Harnett, Moore and Person Counties and first larval activity noted on March 12 in Wake County. Damage moderate to severe in Moore County, mixed with heaviest *Hypera punctata* damage seen in years. (Dogger, Jones). VIRGINIA - Light to heavy very young larval activity in alfalfa fields in Southampton, Halifax, Cumberland, Charlotte, Fluvanna, Orange and Lunenburg Counties. In Prince William County, some fields had up to six very young larvae per group.

Heavy infestation indicates needed control. (Morris et al).

SCARABAEIDS - MARYLAND - Larvae of *Popillia japonica* and *Cyclocephala borealis* averaged 5 per square feet in clover sod with *Cotinis nitida* also present at Trappe, Talbot County. (U. Md., Ent. Dept.).

SOYBEAN CYST NEMATODE (*Heterodera glycines*)-MISSOURI - Infestations have been found only in Pemiscot County. These comprise approximately 950 acres. Infested fields all within one to five miles of Mississippi River and extend from point 3 miles north of Arkansas line to field 18 miles north. (PPC - Cent. Reg., Feb.Rept.). CENTRAL STATES - Negative results from inspections during February in Kentucky and Illinois. (PPC - Cent. Reg., Feb. Rept.).

FRUIT INSECTS

CITRUS BLACKFLY (*Aleurocanthus woglumi*) - MEXICO - In eastern area, 19 trees found infested on 10 properties in Linares, Nuevo Leon with 5 trees on one property. In western area, inspections were negative at Tecate and Tijuana while in Colonia Villa de Serio, Hermosillo, Sonora, 7 properties found infested. Spraying begun on February 22. (PPC - Mex. Reg., Feb. Rept.).

MEXICAN FRUIT FLY (*Anastrepha ludens*) - MEXICO - None trapped during February in Baja California. (PPC- Mex. Reg., Feb. Rept.).

COTTONY-CUSHION SCALE (*Icerya purchasi*) - CALIFORNIA - Building up significantly on citrus in Coachella Valley, Riverside County. (Cal. Coop. Rept., Mar. 8). ARIZONA Light some blocks of citrus at Tempe. Third and fourth instars at 1 to 2 per leaf or branch in infested area. No development of egg sacs yet. Adult and larval *Rodolia cardinalis* present. (Ariz. Coop. Rept.).

A MITE (*Epilohmannia* sp.) - CALIFORNIA - Tunneling under root surface of grape vines near Escalon district and at Acompo. Decline of infested and adjacent vines noted. Mite present in State for 20 years, but only recently damage reported. (Cal. Coop. Rept., Mar. 8).

GREEN PEACH APHID (*Myzus persicae*) - WASHINGTON - Eggs began to hatch March 4 at Union Gap. (Landis).

TRUCK CROP INSECTS

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) - SOUTH CAROLINA - Damaging turnips throughout the Piedmont. (Nettles).

CABBAGE APHID (*Brevicoryne brassicae*) - CALIFORNIA - Heavy on mustard in Imperial County. (Cal.Rept., Mar. 8). GEORGIA - Light infestations on cabbage in Colquitt County. (Johnson).

GREEN PEACH APHID (*Myzus persicae*) - OKLAHOMA - None found in spinach fields in Muskogee County. (Coppock).

A THRIP (*Frankliniella occidentalis*) - ARIZONA - Infestation on 80 acres of garlic at Tolleson on March 8. Leaves severely splotched some areas of field. (Ariz. Coop. Rept.).

TOMATO RUSSET MITE (*Vasates lycopersici*) - OKLAHOMA - Causing extensive damage to greenhouse tomatoes in Stillwater area. (Howell).

POTATO PSYLLID (*Paratrioza cockerelli*) - ARIZONA - Very light infestation on potatoes in Maricopa and Pinal Counties on March 7. All stages found. Infestations apparently just beginning. (Ariz. Coop. Rept.).

CARROT RUST FLY (*Psila rosae*) - PENNSYLVANIA - Heavy damage in parsnips being dug in Clearfield County. (Adams).

TOBACCO INSECTS

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) - GEORGIA - Light to moderate infestations on tobacco plant beds in Worth, Mitchell, Colquitt, Cook, Tift, Ben Hill, Dodge and Laurens Counties. (Johnson).

GREEN PEACH APHID (*Myzus persicae*) - GEORGIA - Light to moderate infestations on tobacco plant beds in Colquitt, Cook and Tift Counties. (Johnson).

SLUGS - SOUTH CAROLINA - Damaging tobacco plant beds in Orangeburg County. Det. J.M. Lewis. (Nettles, Kearse).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

GYPSY MOTH (*Porthetria dispar*) - MICHIGAN - Spray program will begin early in May. Area to be sprayed will consist of 22 square miles in Eaton County and 9 square miles in Shiawassee and Clinton Counties. Approximately 7,573 gallons of spray will be used. (PPC - Cent. Reg., Feb. Rept.).

PINE TUBE MOTH (*Argyrotaenia pinatubana*) - PENNSYLVANIA - Found in pupal stage on white pine, Bucks County, March 6. (Menusan).

RED-HEADED PINE SAWFLY (*Neodiprion lecontei*) - FLORIDA - Causing heavy defoliation on longleaf and slash pine in Okaloosa County. Attacking about 3,000 acres in varying intensity, ranging from light on fringes to moderate and heavy in central portions. Trees attacked from ground level to 14 feet in height. Det. J.McMahon. (Denmark).

AN ARBORVITAE APHID (*Cinara tujafilina*) - OKLAHOMA - Very numerous in Stillwater vicinity. (Bryan). VIRGINIA - Medium and spotted on arborvitae in Norfolk and Princess Anne Counties. (Harrell).

AN OAK APHID (*Myzocallis bella*) - CALIFORNIA - Heavy on live oak near Watsonville. Det. F.L.Blanc.(Cal. Coop. Rept., Mar. 8).

EUROPEAN FRUIT LECANIUM (*Lecanium corni*) - WEST VIRGINIA - Moderate to heavy infestation on maple and magnolia in Wood County. (Dorsey, Hansen, Gillespie).

Forest Insects, Louisiana: Infestation of several insects including *Dendroctonus frontalis*, *D. terebrans*, *Ips avulsus*, *I. grandicollis*, *I. calligrapha* and some cerambycids were found over a section of pine timber land at Pride, East Baton Rouge Parish. (Oliver).

A BARK BEETLE (*Phloeosinus cristatus*) - ARIZONA - Started to bore into twigs of Arizona cypress one location in Tucson on nursery stock. (Ariz. Coop. Rept.).

EUONYMUS SCALE (*Unaspis euonymi*) - MARYLAND - Heavy on bittersweet at Towson, Baltimore County. (U. Md., Ent. Dept.).

APHIDS - TENNESSEE - Heavily infesting iris in State. (Mullett).

COTTON INSECTS

Cotton Insect Situation, lower Rio Grande Valley, Texas: THRIPS are only insects present in damaging numbers, in some fields between La Feria and the river. FLEAHOPPERS disappeared after rains. Some negligible CUTWORM infestations in scattered fields and small numbers of SPIDER MITES found in fields south of San Benito. BOLLWORM eggs being found in large numbers on leaves in some fields. (Deer).

PINK BOLLWORM (Pectinophora gossypiella) - MEXICO - Results of surface debris inspection in southern part of eastern area indicate relatively light carry-over in fields. Total of 12,918 bolls from 691 fields inspected with 163 bolls found infested with 142 live and 63 dead larvae. In western area, cotton bloom and green boll inspections were negative. (PPC - Mex. Reg., Feb. Rept.).

INSECTS AFFECTING MAN AND ANIMALS

SHEEP SCAB MITE (Psoroptes equi ovis) -VIRGINIA - Infestation medium some herds in Tazewell County during February; approximately 800 sheep dipped. (McDonald).

STORED PRODUCTS INSECTS

A GRAIN MOTH (Haplotinea ditella) - IDAHO - Found by California Quarantine officers in wheat shipment from Arimo. Believed to be first recorded occurrence in U. S. (Gittins). Available literature reveals little on economic importance of this species.

A WHITE-SHOULDERED GRAIN MOTH (Endrosis lactella)- CALIFORNIA - Found in stored grain in Los Angeles County. (Cal. Coop. Rept., Mar. 8).

BENEFICIAL INSECTS

LADY BEETLES - SOUTH DAKOTA - Many over-wintering adults of Hippodamia convergens, H. parenthesis and Coccinella novemnotata notes in alfalfa fields in southeastern area. One field in Yankton County, beetles especially heavy in sheltered spots. (Hantsbarger).

MISCELLANEOUS INSECTS

TERMITES - IDAHO - Reticulitermes hesperus infesting house at Idaho Falls. (Kohl). MISSISSIPPI - First adults of R. flavipes this year recently received from Lauderdale County. (Hutchins). MARYLAND - Winged forms of R. flavipes in homes in Garrett and Prince George Counties. (U. Md., Ent. Dept.). PENNSYLVANIA - Swarming in Centre County. (Udine).

STONEFLIES - PENNSYLVANIA - Troublesome in homes in Armstrong and Crawford Counties. (Adams).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - GEORGIA - Infestations in Dougherty County, March 13. (Welker).

CLOVER MITES (Bryobia praetiosa) - TENNESSEE - Invading homes. (Mullett).

CORRECTIONS

Distribution of Range Grasshoppers - CEIR 7(10): 188 - Genus should read Pardalophora on maps 101 and 102.

LIGHT TRAP COLLECTIONS

	Pseud.	Agro.	Prod.	Perid.	Feltia	Heliothis		Tri.
	unip.	yps.	orn.	marg.	subt.	zea	vires.	ni
TEXAS								
Brownsville 3/3-9	4				57	22		5
LOUISIANA								
Baton Rouge 3/8-15	13	6	5	1	24		1	1
TENNESSEE (Counties)								
Madison 3/5-11	11	1	1	1				
Maury 3/5-11	10	1		1		1		
Cumberland 3/5-11	3	4						
Monroe 3/5-11	57	23		3				
FLORIDA								
Gainesville 3/13	1	1			3			
SOUTH CAROLINA (Counties)								
Oconee 3/2-8	12	2	3	1	1			
Charleston 2/23-3/3	16	20	2	2	18	1		
NORTH CAROLINA (County)								
Duplin 2/1-2	4		3					
MARYLAND (County)								
Montgomery 3/9-17				2				

ADDITIONAL NOTES

BLACK CHERRY APHID (*Myzus cerasi*) - OREGON - Overwintering eggs hatched March 11 in Yamhill County. (Jones).

SUMMARY OF INSECT CONDITIONS - 1956

CONNECTICUT

Reported by W.D. Tunis,
E.C. Minnum, and Arthur Hawkins

Fruit Insects: PLUM CURCULIO (Conotrachelus nenuphar) population was generally light due to low temperatures during emergence. APPLE MAGGOT (Rhagoletis pomonella) populations were at unusual high level. Emergence was normal, however, for the third straight year and activity extended well into the peak season. Flies were easily detected into October. CODLING MOTH (Carpocapsa pomonella) was generally light except for a few localities where damage was severe. RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) was generally light except in a few locations where it was severe. Second-brood activity extended through August into September. Second brood caused most damage. EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) was very light. Apparently cool conditions during egg-laying period held populations at low level. ROSY APPLE APHID (Anuraphis roseus) population was extremely high. Extensive damage. APPLE APHID (Aphis pomi) - Extremely high populations. Difficult to control in all parts of the State. WHITE APPLE LEAFHOPPER (Typhlocyba pomaria) damage was extensive in a few orchards - Windham, Tolland Counties. EUROPEAN RED MITE (Metatetranychus ulmi) populations were moderate. Peak populations occurred later than usual making control difficult. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) populations were generally light. Some build-up in late August in a few locations. SAN JOSE SCALE (Aspidiotus perniciosus) is building up very rapidly in several localities. Build-up due in part to elimination of delayed dormant oils from spray programs. PEAR PSYLLA (Psylla pyricola) populations were generally light. ORIENTAL FRUIT MOTH (Grapholitha molesta) populations were very high throughout the State. PEACH TREE BORER (Sanninoidea exitiosa) was generally light except in a few locations where populations were moderate. GRAPE BERRY MOTH (Paralobesia viteana) was generally heavy throughout the State. BLUEBERRY MAGGOT (Rhagoletis pomonella) was generally moderate on cultivated blueberries. CYCLAMEN MITE (Steneotarsonemus pallidus) was very severe in a few strawberry plantings.

Truck Crop and Garden Insects: ASPARAGUS BEETLE (Crioceris asparagi) populations were generally light. MEXICAN BEAN BEETLE (Epilachna varivestis) populations were extremely low. LEAFHOPPER populations were very high on celery, lettuce, beans and carrots. EUROPEAN CORN BORER (Pyrausta nubilalis) populations were moderate throughout the State. Some heavy infestations found in Tolland and Hartford Counties. CORN EARWORM (Heliothis zea) populations were light to moderate. STRIPED CUCUMBER BEETLE (Acalymma vittata) populations were light to moderate. APHIDS populations on vegetable crops were moderate. FLEA BEETLE damage was moderate early in season. Populations were at low level for remainder of season. CABBAGE LOOPER (Trichoplusia ni) was moderate to severe late in the season. IMPORTED CABBAGEWORM (Pieris rapae) populations were generally light.

Hay and Forage Crop Insects: PEA APHID (Macrosiphum pisi) populations were unusually high on first cutting of alfalfa. MEADOW SPITTLEBUG (Philaenus leucophthalmus) populations were moderate ranging from 25 to 35 per square yard on alfalfa and clover. POTATO LEAFHOPPER (Empoasca fabae) damage was moderate on alfalfa throughout the State. Highest populations in five years. THRIPS (species undetermined) severely damaged several plantings of Sudangrass in New Haven County.

Insects Affecting Livestock: HOUSE FLY (Musca domestica) populations were generally heavy around poultry houses and dairy barns throughout the State. CATTLE LICE were generally light. POULTRY LICE and MITES of various species were heavy in many flocks of chickens in Tolland, Windham and New London Counties.

Household Insects: Based on request for information, the following were of significance during 1956: ELM LEAF BEETLE, CLOVER MITE, WASPS, HORNETS, BEES, ANTS, CLOTHES MOTHS, and CARPET BEETLES. Requests for information on identification and control of TERMITES significantly increased during 1956.

SUMMARY OF INSECT CONDITIONS - 1956

CALIFORNIA

Compiled by H.T. Osborn

Highlights: SPOTTED ALFALFA APHID continued to spread over the State with five counties reporting infestation for the first time. Crop losses are estimated at $10,600,000, a 45 percent reduction as compared to 1955 despite a 40 percent increase in the acreage infested. GRASSHOPPER outbreaks were State-wide and unequaled since 1949. Fall surveys estimate that approximately 1,100,000 acres of land will carry grasshoppers of economic proportions in 1957. KHAPRA BEETLE - Eradication of infestations has proceeded during 1956 with 158 properties having total of 28,245,810 cubic feet being fumigated or otherwise treated and released from quarantine. At the end of 1956 only 20 properties with a total of 4,650,067 cubic feet were known to be infested. EUROPEAN FRUIT LECANIUM and other soft scales have been unusually abundant in the Sierra foothill counties and are reported increasing in some areas. SAN JOSE SCALE - Heavy infestations were reported from Sierra foothill localities and elsewhere where not treated. GRAPE LEAF FOLDER infestations were heaviest in the last 20 years in Fresno County. The summer and fall of 1956 were favorable for CALIFORNIA RED SCALE build-up in the interior districts. In coastal districts there was considerable more increase than normal in some cases. The Imperial and Coachella Valleys suffered from heavy infestations of COTTONY-CUSHION SCALE. The SOFT SCALE also showed an increase in these desert areas. CITRUS RED MITE was unusually severe during 1956 in many orchards in coastal and interior districts of southern California. The FIELD CRICKET was unusually abundant and a nuisance in many localities. MITES, APHIDS, and LYGUS BUGS were subject to widespread use of controls. LOOPERS (predominantly Trichoplusia ni) were frequently reported from southern California with more than usual difficulty in control being indicated late in the season. CORN EARWORM was as usual listed among the ten most serious insect pests in widely-separated localites. Unusually heavy populations of BEET LEAFHOPPER early in the season resulted in severe losses due to "curly-top" in the Imperial Valley. A severe, unusual localized infestation of MORNING-GLORY LEAF MINER occurred on sweetpotatoes in Madera County. PEAR PSYLLA was reported for the first time in Sonoma and Napa Counties. It also appeared in the larger pear growing districts of Lake County. On August 24, a single female MELON FLY was captured in a trap at Westwood, Los Angeles County, the first record in California. A single JAPANESE BEETLE was captured July 27 in a trap located at Travis Air Base, Solano County.

Cereal and Forage Insects: SPOTTED ALFALFA APHID continued to spread over the State during 1956. Infestations were found in five new counties, Amador, Colusa, Napa, Inyo and Calaveras. Most important, however, has been the progressive local spread in the Sacramento and San Joaquin Valley areas which were first infested late in 1955 and is primarily responsible for the 350,000 acre increase in infestation as compared with 1955. Only the extreme northern tier of counties and north coastal and northern Sierra Mountains are not yet infested. Treatment costs are estimated at $5,325,000 and crop losses at $5,275,000 for a total over-all loss of $10,600,000. This compares with treatment cost of $3,525,000 in 1955 and estimated crop losses of $9,330,000, a 45 percent reduction in crop losses despite a 40 percent increase in acreage infested. An estimated average yield of four and sixty-five hundredths (4.65) tons of alfalfa hay per acre was not realized. This was attributed largely to late season build-up. Alfalfa hay yields [1] of 4.50 tons per acre were the lowest since 1949. Total yield was 5,427,000 tons valued at $124,821,000. Encouraging are reports of three imported aphid parasites, Praon pallitans, Trioxys utilis and Aphelinus semiflavus (CEIR - 6 (46): 1059). Native predators have again been credited with widespread control assistance. Disturbing is the increasing number of reports, particularly from some of the desert areas, indicating failure to control the aphid with recommended dosages of parathion. WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) caused more widespread damage than for several years. In July infestations in alfalfa extended from the San Joaquin Valley, north to Siskiyou and Modoc Counties. Unusually heavy populations developed in some districts with migration from alfalfa to sugar beets, tomatoes and other crops. Losses varied widely in different counties. Eight counties with susceptible crops valued at $61,802,699, estimated a crop loss of $2,978,378. VARIEGATED CUTWORM (Peridroma margaritosa) infestations in alfalfa were the heaviest ever in Los Angeles County with damage moderate. Adult GRASSHOPPER surveys made in the fall of 1955 indicated that approximately 1,300,000 acres, primarily rangeland, would be infested with populations ranging from "threatening" to "severe" during 1956 season. This prediction was fulfilled in most areas as outbreaks were State-wide and unequaled since 1949. Favorable spring weather resulted in high nymphal survival in all infested areas with the exception of parts of Butte and Tehama Counties. In areas of the San Joaquin Valley, a very severe infestation of Oedaleonotus enigma developed in May and June. Infestations in the balance of the State developed later and about as expected. Extremely heavy populations of Camnula pellucida, developed on rangeland in San Diego andRiverside Counties. C. pellucida and Melanoplus sp. were the species present in heavy populations in Humboldt County and M. devastator in Shasta and Siskiyou Counties. Over-all treatment gave protection to 580,000 acres and resulted in an estimated crop savings of $3,837,851. Fall surveys in 1956 estimated that approximately 1,100,000 acres will carry economic populations during 1957, requiring control on estimated 650,000 acres. CORN EARWORM (Heliothis zea) was widespread, requiring drastic controls in commercial sweet corn plantings and preventative sprays in most tomato plantings. Populations were about normal in 1956. Estimated crop losses in several counties were as follows: Orange - corn, tomatoes, beans and lettuce $300,000; San Joaquin - tomato crops $1,033,928, corn $46,659; Kern - corn $137,752; San Diego - corn $26,638, tomatoes $301,626, ensilage $13,314; Stanislaus - sweet corn $238,645 and tomatoes $105,674. FIELD CRICKET (Acheta assimilis) - Numerous reports throughout the State in the late summer indicated populations above normal. Of the 800,000 acres infested in Imperial Valley it was estimated that absence of control would have caused a loss of 50 percent in young alfalfa, sugar beets and lettuce plantings and 10 percent in young cotton fields due to spring and fall migrations. PEA APHID (Macrosiphum pisi) was widespread on alfalfa and peas, and difficult to control in Los Angeles in April. The aphid was reported general and heavy in Ladino clover and alfalfa in Glenn County. Controls were required on green peas in San Luis Obispo County and alfalfa in Santa Clara County. Losses in alfalfa were estimated at $528,000 in Stanislaus County and $100,000 in Merced County. APHIDS , as vectors of yellow dwarf virus of barley and oats, were reported to have caused a loss of $400,000 in San Luis Obispo County, the most serious in years. LYGUS BUGS (Lygus spp.) were unusually heavy on alfalfa seed crops in the Sacramento and San Joaquin Valleys requiring repeated control sprays. Stanislaus County had heavy infestation on alfalfa and beans and medium infestations occurred on alfalfa seed crops in Imperial Valley. In Kern County, loss to alfalfa seed crop was estimated at over $500,000. Estimates in other counties were less. SPIDER MITES (Tetranychus telarius and other species) were common and widespread on alfalfa, corn, beans and other field crops. BROWN WHEAT MITE (Petrobia latens) was abundant in wheat fields in Cuyama Valley, Santa Barbara County, medium on corn in Coachella Valley, Riverside County, and considered one of the ten most important in Modoc County. Loss, however, was estimated at only four-tenths percent. ALFALFA CATERPILLAR (Colias philodice eurytheme) was general and severe in Yolo County with loss of $200,000 to alfalfa. Loss to alfalfa in Kings County was $29,000. Damage in Riverside County severe in the desert areas. Infestation general and heavy in Imperial County. ALFALFA WEEVIL (Hypera postica) infestations were above normal and severe in most of Modoc County; estimated 10 percent loss. It was light to heavy in Lassen, Siskiyou and Shasta Counties. In the northern San Joaquin Valley and in the central coastal counties no build-up was reported in 1956. EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) appeared in San Luis Obispo County which is northernmost point it has been found. Infestations general and heavy in alfalfa in the Imperial Valley.

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[1] Taken from California Crop and Livestock Reporting Service.

Fruit Insects: PEAR PSYLLA (Psylla pyricola) extended its range in Mendocino and Lake Counties and appeared for the first time in Sonoma and Napa Counties. Found in only a single orchard in the Scott Valley of Lake County in 1955, it was found in all commercial pear districts in that county by June of 1956. No serious losses were reported during the present season. PEAR THRIPS (Taeniothrips inconsequens) - No serious damage was reported during 1956. CODLING MOTH (Carpocapsa pomonella) was satisfactorily controlled in commercial pears and apples in most localities. Infestation was heavy in walnuts, apples and pears where not treated in Los Angeles County. Losses were total in untreated orchards. Crop losses in 16 counties were estimated at $1,576,013 including treatment costs. PEACH TWIG BORER (Anarsia lineatella) was widespread in peaches and almonds and severe in many localities where not treated. Up to 25 percent loss was reported in urban areas of San Diego County in July. Seven counties with susceptible crops had estimated losses of $2,379,416. JAPANESE BEETLE (Popillia japonica) - A single beetle was captured July 27 in a trap at Travis Air Base, Solano County. This is the first Japanese beetle to be caught at any point in northern California. Only two previous captures have been made in California. All these beetles are considered to be escapees from incoming airplanes. EYE-SPOTTED BUD MOTH (Spilonota ocellana) - This moth restricted to the San Francisco Bay area, was reported to be responsible for a two percent loss in prunes in Napa County. ORANGE TORTRIX (Argyrotaenia citrana) caused three percent loss to pears in Napa County. It was considered as one of the ten most important insects in Sonoma County. WESTERN TUSSOCK MOTH (Hemerocampa vetusta) infestations caused moderate damage to 3,500 acres of apricots, 10,300 acres of prunes, and 1,500 acres of cherries in Santa Clara County in May. ORIENTAL FRUIT MOTH (Grapholitha molesta) - The heavy infestations which appeared in the Kingsbury and Exeter areas of the San Joaquin Valley in 1954 and 1955 appear to be under control. Heavy local infestations in Orange County in October. GRAPE LEAF FOLDER (Desmia funeralis) was unusually abundant, being reported from Fresno, Kings, Madera and San Joaquin Counties. It was extremely heavy in areas of Fresno County in August. The infestation was heavier than at any time in the last 20 years. GRAPE LEAFHOPPERS (Erythroneura elegantula, E. variabilis) were heavy on grapes in Madera County, in the Manteca district of San Joaquin County, in the Borrego Valley of San Diego County, and were reported as among the ten most important insects in Riverside and Merced Counties. WALNUT HUSK FLY (Rhagoletis completa) was general in southern California counties in walnuts with heavy local infestation in Orange County. Trap collections made in Kern and Santa Barbara Counties indicate spread northward. Extensive trapping failed to indicate infestations elsewhere except for isolated infestations in Sonoma and Napa Counties. SAN JOSE SCALE (Aspidiotus perniciosus) was widespread and subject to control in commercial plantings. Infestations were damaging in a number of San Joaquin, Sacramento Valley and Sierra foothill counties. Nine counties estimated crop loss at $700,387. ITALIAN PEAR SCALE (Epidiaspis piricola) - Though widespread, it is of greatest economic concern in the San Francisco Bay area. It was considered one of the most serious pests in Santa Clara County with damage to prunes, walnuts, plums and cherries estimated at 10 to 15 percent in 1956. OLIVE SCALE (Parlatoria oleae) was medium to heavy infestations on deciduous fruits and olives occur throughout the San Joaquin Valley with localized infestations south to San Diego County and in some districts of the Sacramento Valley. An infestation found at Orland in Glenn County, northernmost point which pest has been found. Six San Joaquin Valley counties estimate the losses in 1956 at $450,000. Where the introduced parasite, Aphytis maculicornis, has had at least four years to build-up, scale populations were reduced to non-economic levels. LYGUS BUGS (Lygus spp.) damage to deciduous fruit, attributed to influx during early summer, appears to have been widespread. EUROPEAN FRUIT LECANIUM (Lecanium corni) was light to heavy in several counties. A FROSTED SCALE (Lecanium pruinosum) was spotted light to heavy in several areas. BLACK SCALE (Saissetia oleae) heavy on 14,500 acres of apricots in Santa Clara County in March. Damaging infestations reported in Tulare, Yolo and Tehama Counties. SOFT SCALE (Coccus hesperidum) was heavy on peaches in Stockton and a few orchards of prunes in Napa County. It was listed as one of the ten most important insects in Calaveras and Marin Counties. EUROPEAN RED MITE (Metatetranychus ulmi) infestations were light to heavy in El Dorado, Napa, Santa Cruz, and Sacramento Counties in 1956 on prunes, apples and pears. In August heavy infestations were reported in coastal walnut groves in Santa Barbara County. TWO-SPOTTED SPIDER MITES (Tetranychus telarius et al) were widespread and among the most serious pests in California. PACIFIC MITE (Tetranychus pacificus) severe on walnut trees in areas of Lake County in August with resulting sun burn. It was light to heavy in San Joaquin County in vineyards and in San Luis Obispo County caused up to 50 percent defoliation in almonds with 5 percent decrease in yield. It was medium on pears, apples and almonds in Antelope Valley of Los Angeles County. CYCLAMEN MITE (Steneotarsonemus pallidus) and TWO-SPOTTED SPIDER MITE (Tetranychus telarius) were the two most serious pests in strawberries with the cyclamen mite by far the most serious in important commercial plantings. Most serious losses due to cyclamen mite were in commercial plantings in Santa Clara County; estimates at 10 to 15 percent, and in Monterey County, 15 to 20 percent. In Orange County crop loss and control due to cyclamen mite was estimated at 6.6 percent on a strawberry crop valued at $2,100,000. In Monterey County losses in strawberries due to two-spotted spider mites were estimated at 5 to 10 percent of crop valued at $11,779,000. PEACH SILVER MITE (Vasates cornutus) was general and heavy on peach foliage in San Diego County in August. STRAWBERRY APHID (Pentatrichopus fragaefolii), in Orange County built up to damaging numbers in March. Controls were required during the growing season in strawberries in the Arroyo Grande district of San Luis Obispo County. Damage was estimated at 0.1 percent in Santa Cruz County where because of the high value of the strawberry crop , $7,384,000, it was listed as one of the ten most important insects. WALNUT APHID (Chromaphis juglandicola) was common in all walnut areas and required controls in some instances. This was listed as one of the ten most important insects in Lake County in 1956. ROSY APPLE APHID (Anuraphis roseus) was light to heavy in Santa Cruz County in May. Considered to be one of the most important insects in Sonoma County in 1956, with damage estimated at 4 percent to an apple crop valued at $6,000,000. APPLE APHID (Aphis pomi) was medium to heavy in apple orchards in Santa Cruz County in August where damage in 1956 was estimated at 4 percent of a crop valued at $5,671,000.

Citrus Insects: CALIFORNIA RED SCALE (Aonidiella aurantii) - The summer and fall were favorable for build-up in the interior districts. In the coastal districts, red scale developed the normal fall build-up and in some cases was considerably greater than normal. Seven counties estimated the crop loss and cost of control at around $3,400,000. YELLOW SCALE (Aonidiella citrina) was light to severe in Tulare County in July and August. BLACK SCALE (Saissetia oleae) more widespread on citrus in San Diego County and heavy in San Bernardino and Riverside Counties. Infestations were heavier and more general than normal in Ventura County. PURPLE SCALE (Lepidosaphes beckii) was important only in southern coastal areas. Local, medium infestations in Orange County in November were parasitized up to 78 percent by Aphytis lepidosaphes. This parasite was observed to persist even in orchards receiving oil spray. COTTONY-CUSHION SCALE (Icerya purchasi) - Many citrus orchards in the Imperial and Coachella Valleys suffered from heavy infestations. Infestations were medium to heavy in San Bernardino County in April and slight to severe in Tulare County in November. CITRICOLA SCALE (Coccus pseudomagnoliarum) was slight to severe in Tulare County in August. SOFT SCALE (Coccus hesperidum) infestations varied from slight to severe on citrus in Tulare County. Natural enemies cleaned up infestations in areas of Riverside County. Light general infestations in Los Angeles County. CITRUS RED MITE (Metatetranychus citri) was the most important pest of citrus in some areas. It was unusually severe during 1956 causing serious damage in many orchards in both coastal and interior districts of southern California. Four counties with citrus crops valued in excess of $83,000,000 estimate crop damage and cost of control at nearly $4,000,000. CITRUS BUD MITE (Aceria sheldoni) was lighter than normal in 1956 due to the heat wave of August-September 1955. High populations on lemons in November in San Diego County on untreated trees indicate that populations were recovering. CITRUS MITES (Eotetranychus sexmaculatus , Phyllocoptruta oleivora, Brevipalpus lewisi, Eotetranychus yumensis) were serious at times locally. They appear to have been present during 1956 in normal abundance. Some increase of B. lewisi was noted in the desert areas. ORANGE TORTRIX (Argyrotaenia citrana) was heavy locally in Orange County in July. WESTERN TUSSOCK MOTH (Hemerocampa vetusta) was present in most citrus groves in the San Gabriel Valley in Los Angeles County in May. Infestations developed to heavy in some areas of Orange and San Diego Counties.

Truck Crop Insects: BEET LEAFHOPPER (Circulifer tenellus) showed extremely low initial populations in San Joaquin, Sacramento and Salinas Valleys in areas formerly subject to heavy infestations and resulting losses from"curly-top". Surveys for "curly-top" in early tomatoes in Tulare, Fresno, Madera and Merced Counties showed less than one percent of plants infested. Over-all losses in areas north of Tehachapi were negligible. Sprays to suppress overwintering concentrations were applied by the State to 27,644 acres of wild hosts. To suppress fall populations 214,561 acres of Russian-thistle were sprayed by air plus 10,111 acres of perennial hosts. Ninety-eight to 99 percent kills were obtained. Cost of suppressive measures in this area in 1956 was $225,000. No serious crop losses due to "curly-top" have been reported in this area since 1950 when the suppressive program was expanded to include the fall spraying of Russian-thistle. The reduction in incidence of the disease in susceptible crops in this area from an average expectancy of 20 percent annually in absence of controls to less than one percent under control measures suggests a savings in excess of $19,000,000. In the Imperial Valley an entirely different situation exists. By April 1956 serious damage to flax was observed. Counts of beet leafhoppers revealed 50 per sweep on beets and 100 per sweep on chenopodiums. In June damage from "curly-top" was estimated at from five to ten million dollars for entire area in Imperial County; flax had estimated loss of $1,500,000, sugar beets $1,500,000 and 7,000 acres of canning tomatoes were killed with severe damage also in squash, melon and cucumbers. A program to control leafhoppers for protection of succeeding crops in Imperial Valley was inaugurated including application of 13,525 gallons of spray during August. Counts in July prior to spraying showed an average of 30 leafhoppers per sweep. Three weeks after conclusion of spraying there was an average of .29 beet leafhoppers per sweep. In November there were five leafhoppers per 100 sweeps in beet fields. Reports of heavy infestations by CABBAGE APHID (Brevicoryne brassicae) were frequent throughout the year, particularly in coastal areas. A ten percent loss was reported from San Diego County in January. Medium infestations were reported on cole crops in some counties in April. Fifty percent of untreated plants were infested in Los Angeles area in July. Infestation was heavy on brussels sprouts in Santa Cruz County in August and November. Estimates of damage in counties range up to about ten percent for commercial crops valued at over $20,000,000. AN APHID (Anuraphis apiifolia) caused loss of five percent in celery in San Diego County in January. APHIDS, species were light to heavy on many truck crops during the year. Monterey County estimates loss due to aphids at $1,000,000 to vegetable crops valued at $50,000,000. MELON APHID (Aphis gossypii) caused estimated 9.1 percent loss in Los Angeles County to cucurbit crops valued at $1,322,600. LOOPERS and ARMYWORMS were reported heavy in Coachella Valley, Riverside County, in October on some crops. LOOPERS (mainly the CABBAGE LOOPER Trichoplusia ni) were light to heavy on lettuce and crucifers in several areas. Control was difficult in some cases. Losses were estimated at 12 percent of a cole crop valued at $2,000,000 in Orange County, at four percent of lettuce crop valued at over $4,000,000 in Riverside County and at 7.9 percent of the cole crop in Los Angeles County which were valued in 1955 at $1,896,000. ALFALFA LOOPER (Autographa californica) was general on lettuce fields in Monterey County in May with loss estimated at five percent of growing crops. IMPORTED CABBAGEWORM (Pieris rapae) was medium in Santa Barbara County, required control in Sacramento County. Light on brussels sprouts in Santa Cruz County and Santa Clara County estimated loss at five percent of crop. CUTWORMS were heavy in artichoke fields in Santa Cruz County in January. FALL ARMYWORM(Laphygma frugiperda) was heavy in sweet corn plantings in Coachella Valley in October. BEET ARMYWORM (Laphygma exigua) infestations were common in many localities; medium to heavy in some counties on such crops as sugar beets, garbanzos, tomatoes, carrots and eggplant. CABBAGE SEEDPOD WEEVIL (Ceutorhynchus assimilis) appeared on mustard in

Arroyo Grande section of San Luis Obispo County; southernmost point to which it has spread. LYGUS BUGS (*Lygus* spp.) caused ten percent loss in lettuce in Monterey County in May, however, over-all infestation in lettuce and spinach for the season was described as a trace only. Cost of treatment in beans in Monterey County for the season was $125,000. ARTICHOKE PLUME MOTH (*Platyptilia carduidactyla*) - Heavy infestations have continued in artichoke plantings in central California coastal districts. Counts in June in one area of San Mateo County showed 30 percent of the buds infested. Loss for the season in Monterey County was estimated at 20 to 30 percent of the crop valued at $2,212,000. Losses were exceptionally heavy in San Luis Obispo County; averaged 60 percent with a reduced pack-out of artichokes of 45 percent compared with 1955. A loss of $63,444 was estimated with the harvested crop valued at $200,400. MELON FLY (*Dacus cucurbitae*) - Capture of a single female in a trap operated by Los Angeles County Agricultural Commissioner at Westwood was followed by an immediate intensive trapping and suppressive control program which has so far failed to result in the capture of any additional melon flies or to substantiate the presence of an established infestation. At the peak of the trapping program nearly 10,000 state, county and federal traps were in operation. Two poison bait sprays were applied to vegetation in a one-half to one mile radius from the trap catch location. MORNING-GLORY LEAF MINER (*Bedellia somnulentella*) - A very heavy infestation occurred on sweetpotatoes in Madera County with the vines completely riddled in some fields. Infestation was also noted in Fresno and Merced Counties. This species has been widespread in California for many years but such localized, extremely heavy populations have not previously been reported on sweetpotatoes. POTATO TUBERWORM (*Gnorimoschema operculella*) was heavy and killing plants in fields of peppers in Santa Barbara County in July. Light to heavy populations occurred on potatoes in San Bernardino, Santa Barbara and Riverside Counties. Controls were required in San Luis Obispo County. PEPPER WEEVIL (*Anthonomus eugenii*) was light in some fields of peppers in northern San Diego County in July. WIREWORMS caused medium to heavy injury in potatoes in Santa Barbara County. Monterey, Orange, San Joaquin and Yolo Counties list wireworms among the ten most important insects. TOMATO RUSSET MITE (*Vasates lycopersici*) is so generally controlled in commercial plantings that few reports of damage are received. Both Sacramento and San Joaquin Counties list this species as one of the ten most important pests. Several species of SPIDER MITES were light to heavy on melons in Riverside County. WESTERN POTATO LEAFHOPPER (*Empoasca abrupta*) was numerous at times on squash in Los Angeles and Riverside Counties. A SERPENTINE LEAF MINER (*Liriomyza* spp., probably *langei*) caused serious damage, losses of 40 percent to spinach in the Soledad and Greenfield districts of Monterey County.

Cotton Insects: Cotton outranked in value all other single crops grown in California in 1956, having a combined value for lint and cotton seed of $280,614,000. Insect losses, while serious, requiring extensive control measures are relatively unimportant when compared with losses incurred in other cotton-producing areas. The absence of such major pests as BOLL WEEVIL (*Anthonomus grandis*) and PINK BOLLWORM (*Pectinophora gossypiella*) are cited as contributing to the high yields, 897 pounds of lint per acre, and quality of cotton produced. To detect possible presence of pink bollworm in California a survey is made each year during the harvest season. In 1956 during October, November and December, 25,555 bushels of gin trash were inspected. As a supplement, nearly 100,000 mature unopened bolls were cut and examined. No indication of infestation by the pink bollworm was found. BOLLWORM (*Heliothis zea*) is one of the most serious pests in cotton in California. By July it was reported general and fairly heavy in Imperial Valley, light to heavy in the Coachella and Palo Verde Valleys, Riverside County. In September populations continued a problem in late-flowering fields in San Joaquin Valley and were heavy in Imperial Valley. Predators are credited with holding down populations during the early part of the season and were noted particularly active in some untreated fields in Imperial Valley late in September. Estimated losses vary from one to 15 percent with Imperial, Riverside and Kern Counties being most seriously affected. Kern County estimated loss to crop and cost of control at near $10,000,000, Riverside County at more than $600,000. LYGUS BUGS (*Lygus* spp.) were moderate to heavy in Imperial Valley and above economic levels in some cotton fields in Kern County. In

September high populations, mostly nymphs, were in Imperial County fields. In Fresno County, loss caused by lygus bugs was estimated at $500,000. SPIDER MITES had become heavy in Madera County and a problem in many fields throughout the San Joaquin Valley by July and were fairly heavy in the Imperial Valley. Loss in the San Joaquin area appeared to be heavier than in the desert areas. Fresno County estimated damage and control at $4,750,000. COTTON APHID (*Aphis gossypii*) - In many portions of San Joaquin Valley severe damage to cotton fibers was observed. In Old River section of Kern County populations became more abundant than for the past two seasons with honeydew and mold reducing grade. SALT-MARSH CATERPILLAR (*Estigmene acrea*) was heavy in the Palo Verde Valley in Riverside County in August and September. Metal barriers were extensively used in late season in the Imperial and Palo Verde Valleys to prevent spread to new plantings of vegetables. COTTON LEAF PERFORATOR (*Bucculatrix thurberiella*), pest in desert areas, was medium to heavy in the Palo Verde and Coachella Valleys in August. It was considered as one of the ten most important insects in Riverside County in 1956 with damage to the $8,646,620 crop of three percent or $259,398. Cost of control measures was $64,750. LOOPERS (predominantly *T. ni*) were quite general in the desert areas. They were heavy in cotton in the Imperial Valley with large numbers of eggs and larvae still present in September and with control required in some fields. STINK BUGS were general and heavy in the Imperial Valley in July with migration observed from alfalfa fields to cotton. Heavy populations continued through August on cotton and in alfalfa seed fields.

Stored Products Insects: KHAPRA BEETLE (*Trogoderma granarium*) eradication proceeded steadily during 1956. One hundred fifty-eight properties, with total of 28,245,810 cubic feet were fumigated or otherwise treated and released from quarantine. Of the 280 properties with a total of 71,388,331 cubic feet found infested since November 1953, 260 with a total of 66,738,264 cubic feet have now been released from quarantine leaving only 20 properties with a total of 4,650,067 cubic feet known to be infested. Cost of eradication program in California to date has been in excess of $1,500,000; $900,000 in 1955 and $750,000 in 1956. The value of stored products threatened by unrestrained dispersal of this insect is more than $200,000,000.

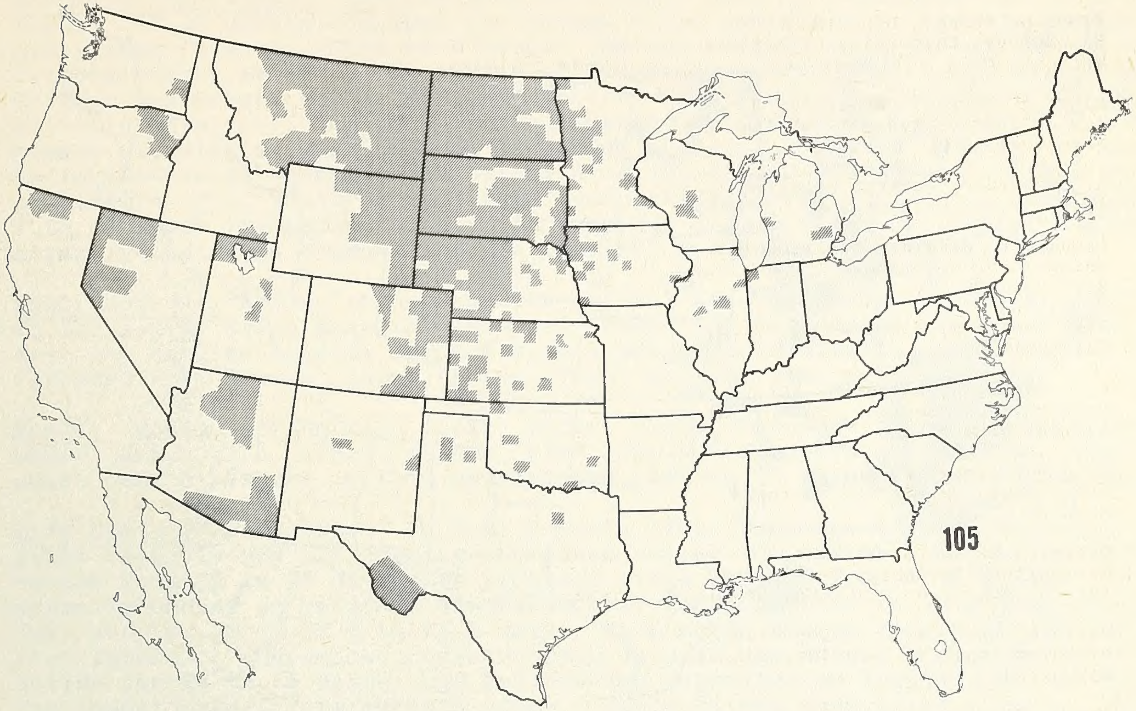
This summary of insect pests in California has been abstracted from the Monthly Cooperative Insect Pest Reports for 1956, and the annual reports of the County Agricultural Commissioners.

COOPERATIVE SURVEY ENTOMOLOGISTS

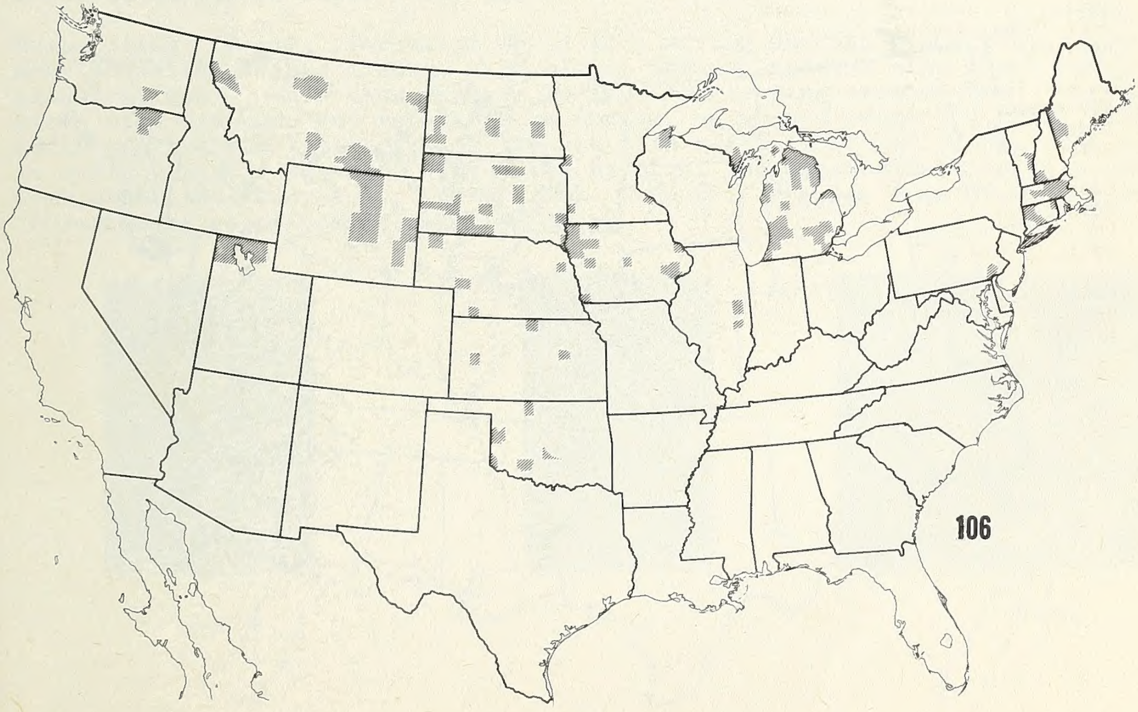
Alabama	VACANCY
Arizona	Floyd G. Werner, Department of Entomology, University of Arizona, Tucson
Arkansas	Lloyd O. Warren, College of Agriculture, University of Arkansas, Fayetteville
California	A. G. Forbes, Acting, Department of Agriculture, Sacramento
Colorado	Leonard E. Jenkins, Department of Entomology, Colorado A & M College, Fort Collins
Florida	H. A. Denmark, State Plant Board, Gainesville
Georgia	W. C. Johnson, Extension Service, University of Georgia, College of Agriculture, Athens
Idaho	A. R. Gittins, Entomology Department, University of Idaho, Moscow
Illinois	Clarence E. White, Illinois Agriculture Extension Service, 280 Natural Resources Building, Urbana
Kansas	David L. Matthew, Jr., Department of Entomology, Kansas State College Manhattan
Louisiana	Abe D. Oliver, Department of Entomology, Louisiana State University, Baton Rouge 3
Maryland	Wallace C. Harding, Jr., Department of Entomology, University of Maryland, College Park
Minnesota	Robert Flaskerd, Department of Agriculture, Division of Plant Industry, University Farm, 301 Coffey Hall, St. Paul 1
Missouri	George W. Thomas, Department of Entomology, College of Agriculture, University of Missouri, 106 Whitten Hall, Columbia
Nebraska	Lloyd W. Andersen, Extension Service, Agricultural College, Lincoln 3
Nevada	Harry E. Gallaway, Department of Agriculture, P.O. Box 1027, Reno
North Carolina	Maurice H. Farrier, Department of Entomology, Box 5215, State College Station, Raleigh
North Dakota	Vance V. Goodfellow, Office of State Entomologist, State College Station, Fargo
Oklahoma	Stanley Coppock, Jr.,Department of Entomology, Oklahoma A & M College, Stillwater
Oregon	Joe Capizzi, Division of Plant Industry, Agricultural Building, Salem
Rhode Island	W. N. Stoner, Department of Plant Pathology-Entomology, University of Rhode Island, Kingston
South Dakota	William Hantsbarger, Entomology-Zoology Department, South Dakota State College, College Station
Tennessee	VACANCY
Texas	H. A. Turney, Department of Entomology, Texas A & M College, College Station
Utah	George F. Knowlton, Utah State Agricultural College, Logan
Virginia	Arthur P. Morris, Virginia Polytechnic Institute, Blacksburg
Washington	E. S. Dailey, Department of Entomology, Washington State College, Pullman
West Virginia	William H. Gillespie, 721 Nomi Street, Morgantown or Brooks Hall, West Virginia University
Wisconsin	Philip W. Smith, Plant Industry Division, Wisconsin Department of Agriculture, 315 N. Carroll Street, Madison 3
Wyoming	Everett W. Spackman, Division of Plant Industry, Department of Agriculture, 308 Capitol Building, Cheyenne

DISTRIBUTION OF RANGE GRASSHOPPERS

Phoetaliotes nebrascensis (Thomas)

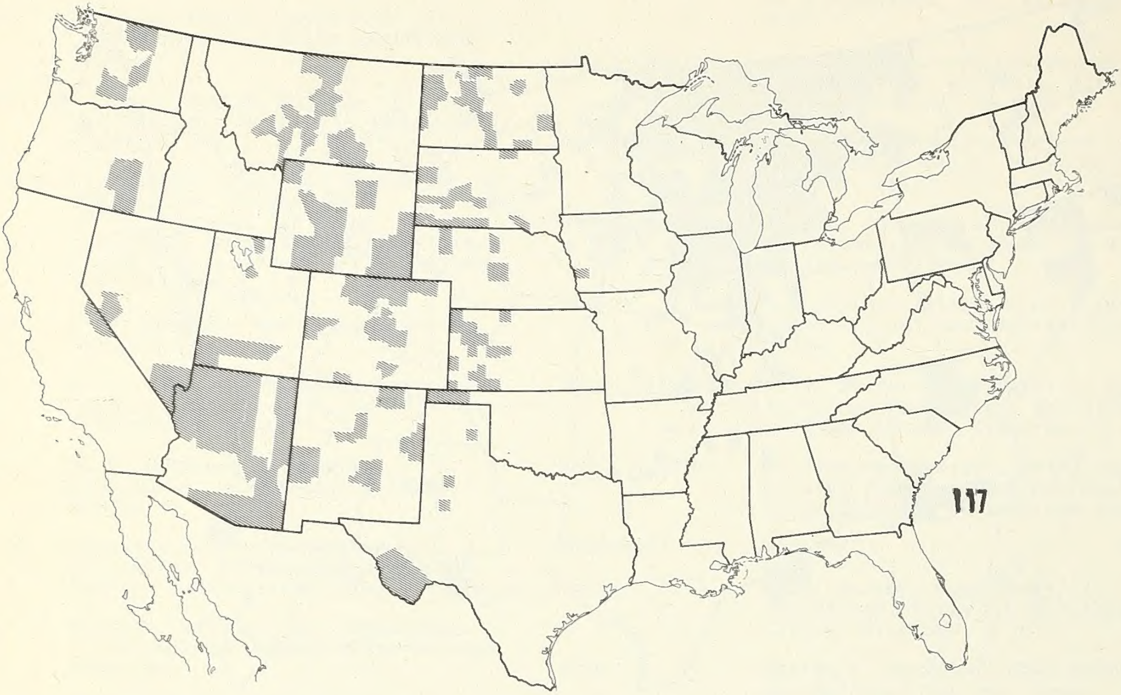


Pseudopomala brachyptera (Scudder)

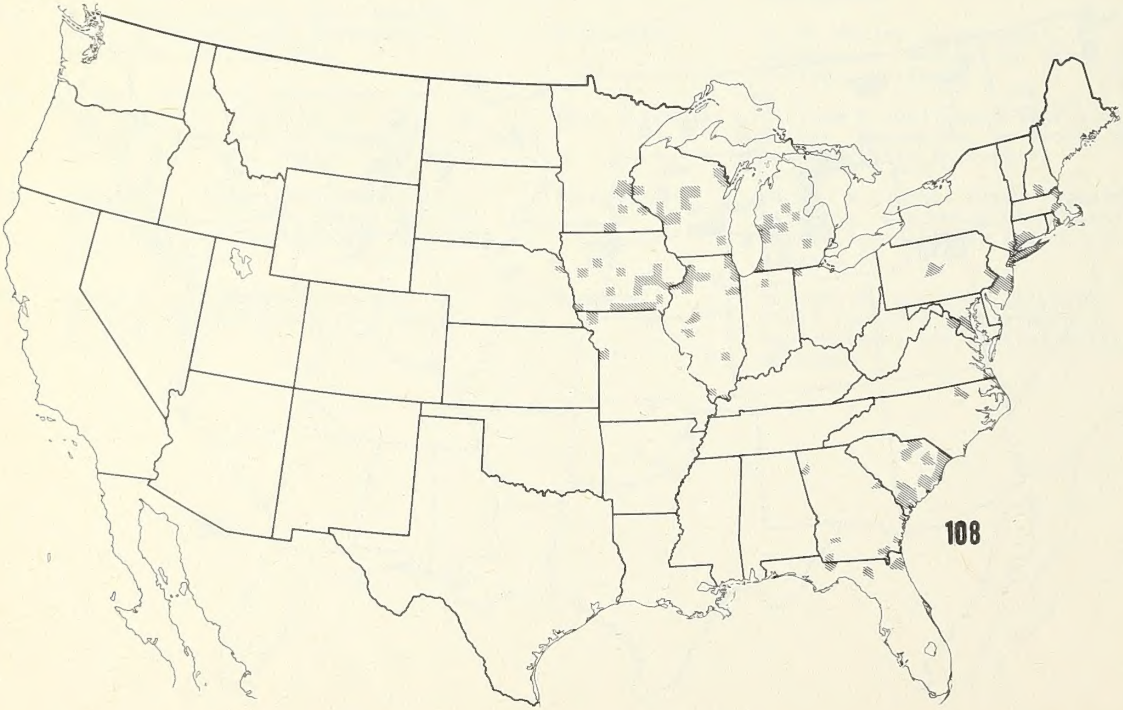


DISTRIBUTION OF RANGE GRASSHOPPERS

Psoloessa delicatula (Scudder)



Schistocerca alutacea (Harris)



INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

NUN MOTH (*Lymantria monacha* L.)

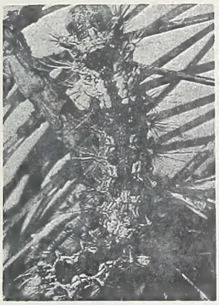
Economic Importance: The nun moth is a major pest of coniferous and deciduous trees. It is understood that its damage often parallels or exceeds that of the gypsy moth in areas where both occur. Severe attacks occurred in forests of Czechoslovakia in the early 1920's although infestations were not as serious in Belgium and France during the same period. The serious outbreaks in Czechoslovakia entirely defoliated 262,000 acres and caused an estimated loss of 1 1/2 million pounds sterling over an area of 1,400,000 acres of infested forest. In addition to forest damage, complete defoliation of apples and pears was recorded in that country in 1922. Outbreaks of this lymantriid generally occur at intervals of 7 to 10 years in Czechoslovakia and last for 5 to 7 while in Germany outbreaks normally last 3 to 4 years and are usually checked by a virus disease.

Distribution: Spread throughout the central area of Europe extending to Spain in the south, Britain in the west and Sweden and Finland in the north. On the east the species extends through Russia proper into Siberia. In Asia it is recorded from Turkey, Japan, Korea, Tibet and sections of China.

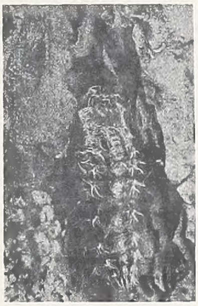
Hosts: Hosts include fir, maple, alder, birch, European hornbean, hazelnut, beech, ash, larch, apple, spruce, pine, poplar, European aspen, plum, cherry, pear, oak, buckthorn, willow, mountainash, linden, l and European whortleberry.

Life History and Habits: In East Prussia (West European Russia) hatching takes place in early May and feeding continues during the summer. Larval development varies from 51 to 66 days with prepupal stage lasting from 1 to 5 days. Pupation normally occurs on branches or trunks near feeding sites in late June and early July and last from 12.5 to 23.5 days. Male moths emerge about one day earlier than females. Emergence occurs between July 12 and August 4 and adults are active for 24 to 36 days. Egg batches are deposited on tree trunks and branches. The insect overwinters in this stage. There is one generation a year. Data from Czechoslovakia show that *L. monacha* slowly increases in population with light rainfall and decreases with heavy rains. In that country infestations do not occur at altitudes above 3,300 feet.

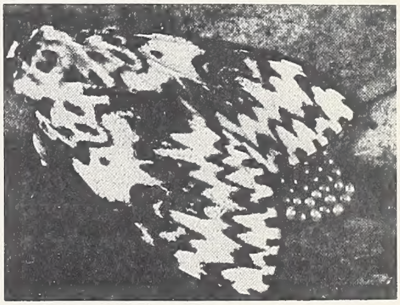
Description: Adult: Forewings white with strong notched black lines; hind wings grayish white; fringe flecked with black; abdomen reddish with black bands (see illustrations). Male-wing expanse 40 mm., female-wing expanse 55mm. Larva: Brown with six blue and red warts on dorsum; on second segment a black, blue and white spot; three last segments flecked with black; 20-25 mm. long. The species is quite variable in color. (Prepared by Plant Pest Survey Section in cooperation with other ARS agencies). CEIR 7 (12) 3-22-57. Figures from Gäbler, H. 1955. Forstschutz gegen Tiere. Berlin 368 pp.



Larva



Pupa



Adult